

User Manual

Waterproof Weighing scale

ESW



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


Thank you for purchasing EXCELL waterproof weighing scale. In order to use the scale properly, please read this instruction carefully before use. If you have a problem concerning the scale, please contact your supplier.

Instruction for Use

1. Please keep the scale in a cool dry place. Do not store it at high temperature.
2. Avoid objects impacting with the scale. Do not drop loads onto the scale or subject the weigh pan to any strong shock loads.
3. The load placed on the weigh pan must not exceed the maximum weighing capacity of the scale.
4. If the scale is not going to be used for some time, please clean it and store it in a plastic bag in dry conditions. A desiccant sachet may be included to prevent any moisture build up.

Preparing To Use the Scale

1. Adjust the four levelling feet (if fitted) to set the scale pan level using the spirit level bubble located at the front of the scale.
2. Avoid operating the scale in direct sunlight or drafts of any kind.
3. If possible avoid connecting the scale to ac power outlet sockets which are adjacent to other appliances to minimise the possibility of interference affecting the performance of the scale.
4. Remove any weight that might be on the weigh pan before the scale is switched on and avoid leaving weight on the pan for long periods of time
5. All goods weighed should be placed in the centre of the weigh pan for accurate weighing. The overall dimensions of the goods being weighed should not exceed the dimension of the weigh pan.
6. We suggest to warm up the scale for 15~20 minutes before operation to ensure best accuracy.
7. Please note when the  symbol keeps flashing on the screen, the batteries need to be replaced.
8. Introduction of Storage Battery



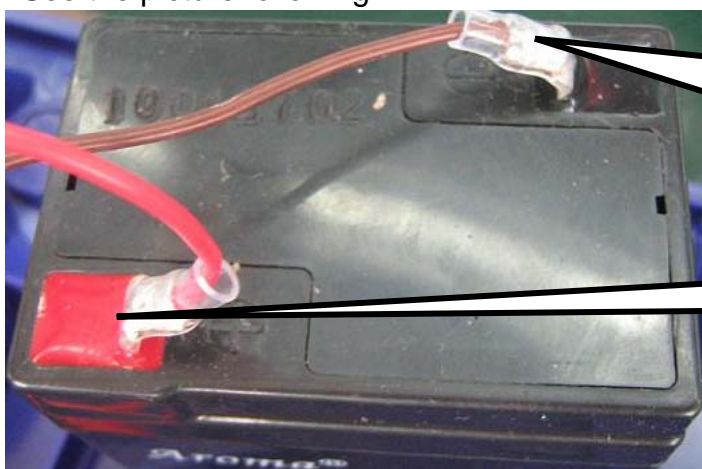
Due to the storage battery adopt the advanced free-maintaining technique, customers need not to replenish electrolyte.

The scale should be recharged every 3 months to prevent failure of the internal rechargeable battery.

1. The battery should be charged for 8~10 hours.
2. The temperature of battery should below 45°C.

Maintaining

1. Please do not discharge with over-current when using the battery. Please charge the battery after discharging current.
2. Please take down the battery when the scale is not used for a long time or break the connection of cathode.
3. Do not short the battery terminals to check whether there is current. Please check whether the connection point is firm to guarantee good connection.
4. The battery should be replaced by specialized person. **No reverse-battery or the product will be damaged.**
 - a) Anode of battery should be connected with Anode of product battery (usually red cable)
 - b) Cathode of battery should be connected with Cathode of product battery (usually brown cable or black cable)
 - c) See the picture following



Brown cable(or black cable)
connected with Anode of
battery

Red cable connected with
Cathode of battery

Safety warnings

1. The electrolyte of battery is caustic which causes metal, cotton, etc to corrode.
2. The hydrogen will be resolved when using or charging the battery and it will cause explosion when approaches fire.



No burning



Caution Corrosion



Warning explosion



Children faraway



Chapter 1 Introduction

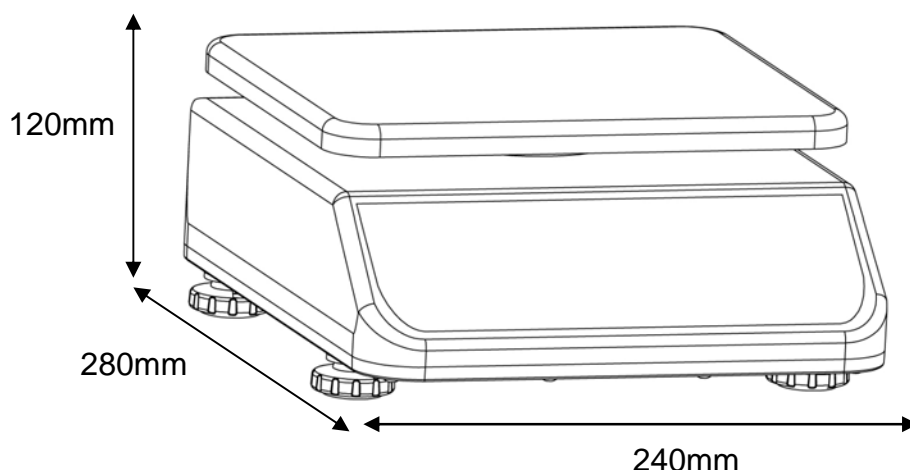
1-1 Features and Specifications

Features:

- ◆ Sealed waterproof silica gel strip blocks water from infiltrating into the scale.
- ◆ Surrounded by waterproof grade sheeting to ensure the water free.
- ◆ 1/3,000~1/6,000 display resolution available.
- ◆ Aluminum frames coated with anti-corrosion treatment for longer lifespan.
- ◆ Stainless steel made feet and platter for anti-rust.
- ◆ High speed of 24bits AD fast reacts and shortens the weighing operation duration.
- ◆ Selectable units: Kilogram (kg), gram (g), ounce (oz), and pound (lb) weighing units available.
- ◆ Built-in rechargeable battery can be easily replaced.
- ◆ Low power indication and auto power off.
- ◆ Well-designed protection point for transportation.
- ◆ Concave handle for easy carrying.

Specifications:

Model	Capacity	Division	Resolution
ESW-3	3kg	0.5g 1g	1/6,000 1/3,000
ESW-6	6kg	1g 2g	1/6,000 1/3,000
ESW-15	15kg	2g 5g	1/7,500 1/3,000
ESW-30	30Kg	5g 10g	1/6,000 1/3,000
Operating Temperature: Non-approval model: 0°C ~ 40°C (32°F ~ 104°F) Approval model: -10°C ~ 40°C (14°F ~ 104°F)			
Dimensions: 240 x 120 x 280 mm (W x H x D)			
Weight of the scale: Around 3.5kg			





1-2 Power Supply


Power Supply Selection

1. DC 6V / 4Ah rechargeable battery
2. AC 110V~240V (±10%) adapter

Power Consumption

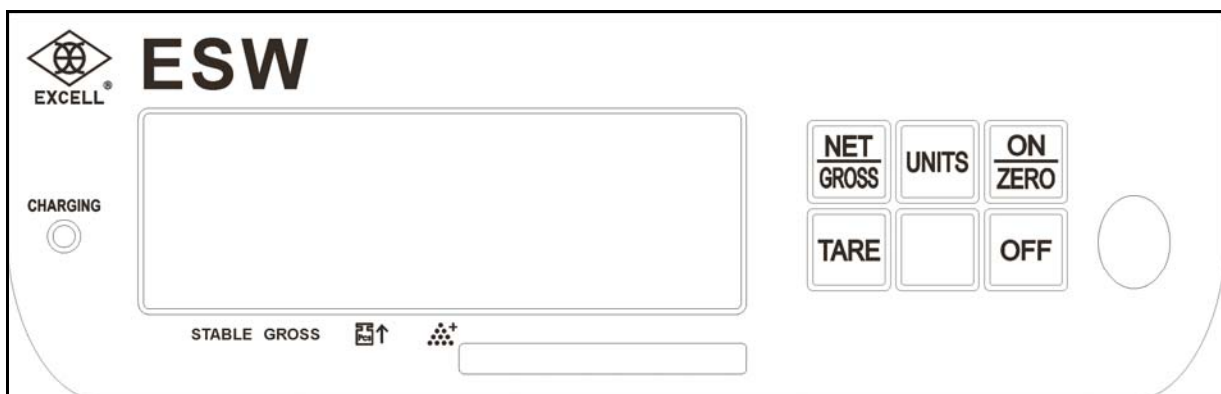
14mA (system no backlight ; Single display)	about 275 hours
19mA (system backlight ; single display)	about 200 hours

Low Battery Warning



Please note when the () symbol keeps flashing on the display, the batteries should be changed.

- ☞ The scale will turn off automatically after a few hours when the low battery warning symbol shows up. The scale must be fully charged, before operating again.

1-3 Panel and Keyboard Introduction



Icon Introduction

- STABLE : The weight is stable.
- GROSS : The scale is in the gross mode. The display shows the goods and any container weight. This Gross status indication is on when the TARE function is used.
-  : The unit weight is not sufficient. When the icon is on, the counting function is operational but the count may contain errors.
-  : The sampling size is not sufficient. When the icon is on, the counting function is operational but the count may contain errors.

Keyboard Function

ON/ZERO KEY

This key possesses two functions: Power On and Zero function.

OFF KEY

When the scale is switched on, press the **OFF** key, the scale will switch off.

TARE KEY

The tare function will not operate during the following conditions:



1. When the scale powers on if the weight is negative and after a container is placed on the weigh pan if the weight is still below zero.
2. The tare value is over the full scale capacity.

UNITS KEY

Press the **UNITS** key to switch weight units; the icons will indicate the active units.

NET/GROSS KEY

In the Tare mode, the screen displays the "TARE" icon; press the **NET/GROSS** key to switch between the "Net value" and the "Gross value".

1-4 Operating the Scale

POWER ON

When the scale is off, press the **ON/ZERO** key, the scale will switch on.

POWER OFF

When the scale is on, press the **OFF** key, the scale will switch off.

ZERO

When the weigh pan is empty (free of load) and the display is not showing zero, press the **ON/ZERO** key to zero the scale. At zero, the "→0←" indication is on.

- ☞ When the weight value is within the zero range, the zero function operates to zero the scale or cancel the tare function.
- ☞ Zero range: The OIML & NTEP models have a zero range of $\pm 2\%$ of Full Scale. The Sri Lanka model has a zero range of $\pm 4\%$ of Full Scale.

SWITCHING UNITS

Press the **UNITS** key to switch weight units, the icons or arrows will indicate the active units as appropriate. The units available are dependent on the exact scale model.

- ☞ After power off, the scale will memorize the active units. When the scale is powered on again, it displays the previously active units.

TARE FUNCTION

- (1) Put a container on the weigh pan and after the weight is stable, press the **TARE** key to zero the weight of the container. The screen displays the "Net" icon.
 - (2) Put the goods in the container, the screen displays the net weight value of the goods.
 - (3) Remove the full container; the screen displays the negative weight value of the container. At this time pressing the **TARE** key again will cancel the tare and the scale reverts back to zero. The "Net" icon is switched off.
- ☞ The tare function can be operated continually to the full weighing capacity of the scale.
 - ☞ Continual tare operation is adding or removing tare objects on weigh pan and pressing the **TARE** key each time.

NET/GROSS FUNCTION

In the Tare mode, the screen displays the "Net" icon, press the **NET/GROSS** key to switch between the "Net value" and the "Gross value".

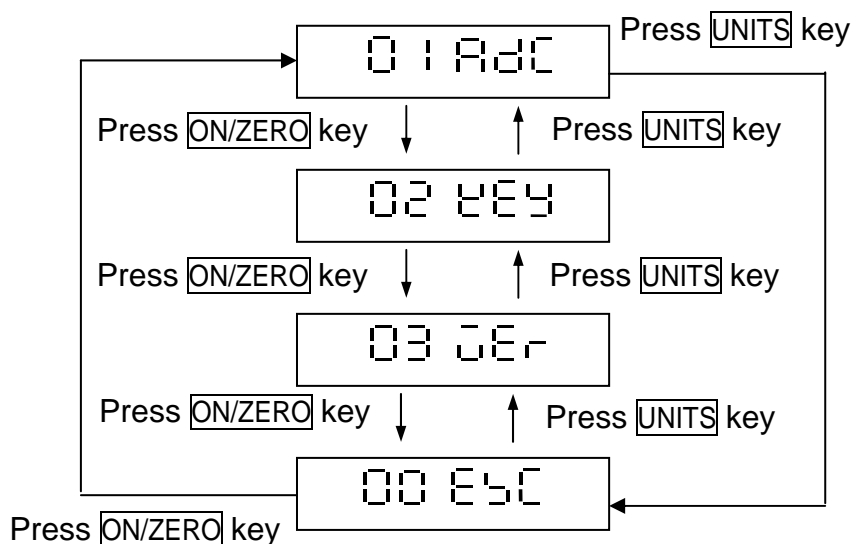
- ☞ When the ▼ GROSS icon is on, the weight value on the display is the total amount of the tare value and net value.
- ☞ At the Gross status, only **OFF** and **NET/GROSS** keys are functional.
- ☞ **NET/GROSS** key is only used in Tare mode.

**SIMPLE COUNTING FUNCTION**

- (1) Use the **UNITS** key to enter into the “PCS” mode
 - (2) Press the **NET/GROSS** key to select the counting sample size
(S = 10, S = 20, S = 50, S = 100, S=200).
The LCD shows **10**, **20**, **50**, **100**, **200** in order.
 - (3) Put the samples on the weigh pan and press the **UNITS** key, the screen displays “-----”. After the sampling process is complete, put the goods on the weigh pan and the screen shows the quantity of the items.
- ☞ The sample weight should be heavier then the minimum capacity of the scale (20d), If not the arrow pointing to the icon will be activated.
 - ☞ The weight of a sample should be heavier than the 0.2d (d=division), or the arrow pointing to the icon will be on.
 - ☞ When the or are indicated, the scale is still operational but the count may contain errors.
 - ☞ To power off in this mode, the scale will memorize the “Pcs” unit. When the scale is powered on again, it directly enters the simple counting mode.
 - ☞ While the “Auto unit weight average” function is available in the Advanced Function, the goods on the weigh pan are 5pcs greater than the sample size and less than double the sample size, the scale will automatically re-sample the unit weight.

1-5 Self-Test Mode

- ☞ Set the switch SWA1 on the bottom of machine to the LOCK position. When power is off, hold **NET/GROSS**, and press **ON/ZERO** key, Wait till display shows **01 AdC** to enter “Self-Test Mode”.



**01 AdC INTERNAL VALUE MODE** (must hook up Load Cell to test)

- ① Press **TARE** to enter, and the display shows internal value
- ② Please check whether the internal value has changed obviously with weight changing.
- ③ Please check the backlight.
- ④ Press **ON/ZERO** key to back to the last screen , the display shows **01 AdC**

02 EEY KEYPAD TEST MODE

- ① Press **TARE** to enter, display shows **EEY 07**
Keypad's internal code: **TARE** key= 07 **UNITS** key= 06 **NET/GROSS** key=05
- ② Press **ON/ZERO** key to back to the last screen , the display shows **02 EEY**

03 CEr FIRMWARE VERSION DISPLAY MODE

- ① Press **TARE** to enter , display shows the firmware version **02005**
- ② Press **TARE** key again, the display shows maintenance number **3 1 1** for 2 secs
- ③ Press **ON/ZERO** key to back to the last screen, display shows **03 CEr**

00 ESc BACK TO THE LAST SCREEN

Press **TARE** key to exit self-test mode, the scale will restart automatically.

1-6 Error Messages

E0 ⇒ Unable to read the EEPROM

The EEPROM is not mounted yet, or the circuit near EEPROM is broken.

E1 ⇒ Initial zero is higher than the zero range when switching the indicator on.
(Approval models)

E2 ⇒ Initial zero is lower than the zero range when switching the indicator on.
(Approval models)

ES ⇒ Internal value is below Zero.

E9 ⇒ A/D IC malfunction (cannot read A/D value). The load cell may not be connected to the scale correctly.

OL ⇒ The weight of the object is over 9 divisions of the maximum capacity.

OF ⇒ A/D IC value is over the maximum range.

1-7 Weight Unit

(kg)	1 g = 0.001 kg
(g)	1 g = 1 g
(lb)	1 g = 0.002204623 lb
(lb/oz)	1 g = 0.03527396 oz



Chapter 2 Advanced Functions

2-1 Advanced Function Setting Table

Below is an overview of the advanced functions. For detailed settings refer to the following sections:

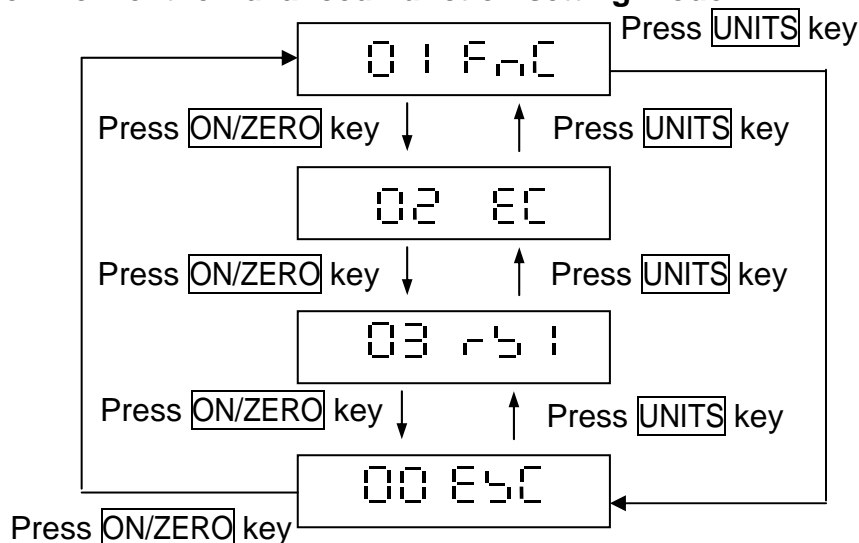
DISPLAY	LEVEL 1 FUNCTION	DISPLAY	LEVEL 2 FUNCTIONS
00 ESC	Exit the ADVANCED FUNCTION setting mode	---	---
01 Fnc	General Function setting mode	Fnc 00	Return to the ADVANCED FUNCTION setting menu
		Fnc 01	Automatic backlight function setting
		Fnc 02	Automatic power-off timer setting
		Fnc 03	Hi/Lo/OK function setting
		Fnc 04	Restore the default settings
		Fnc 05	Noise filter setting
		Fnc 06	Hold function setting
		Fnc 07	Auto unit weight averaging setting
02 EC	External Weight Calibration	---	---
03 r51	Reserved	Reserved	Reserved



2-2 Advanced Function Setting Workflow

In the weighing mode, press the **NET/GROSS** and **ON/ZERO** keys at the same time to enter the **Advanced Function** setting mode. The LCD shows **01 F_nC**.

Overall workflow of the Advanced Function setting mode:



01 F_nC	⇒ General Function setting mode
02 EC	⇒ External Weight Calibration
03 r51	⇒ Reserved
00 ESC	⇒ Exit the Advanced Function setting mode

Refer to the following sections for the detailed operation procedures of each function setting.



2-3 General Function Setting 01 F_nC

There are 7 functions in the general function setting mode from F_nC 01 to F_nC 07.

Workflow of the General Function setting:

ACTIONS

DISPLAY

NOTE

Press **TARE** key

Use the keys to select the function

Key in "00" and press **TARE** key to return to the Advanced function setting menu

01 F_nC

F_nC 00

F_nC 00

01 F_nC

ON/ZERO key ⇒ Upward key (from 0 to 9)

UNITS key ⇒ Downward key (from 9 to 0)

TARE key ⇒ Move the cursor to right

NET/GROSS key ⇒ Move the cursor to left

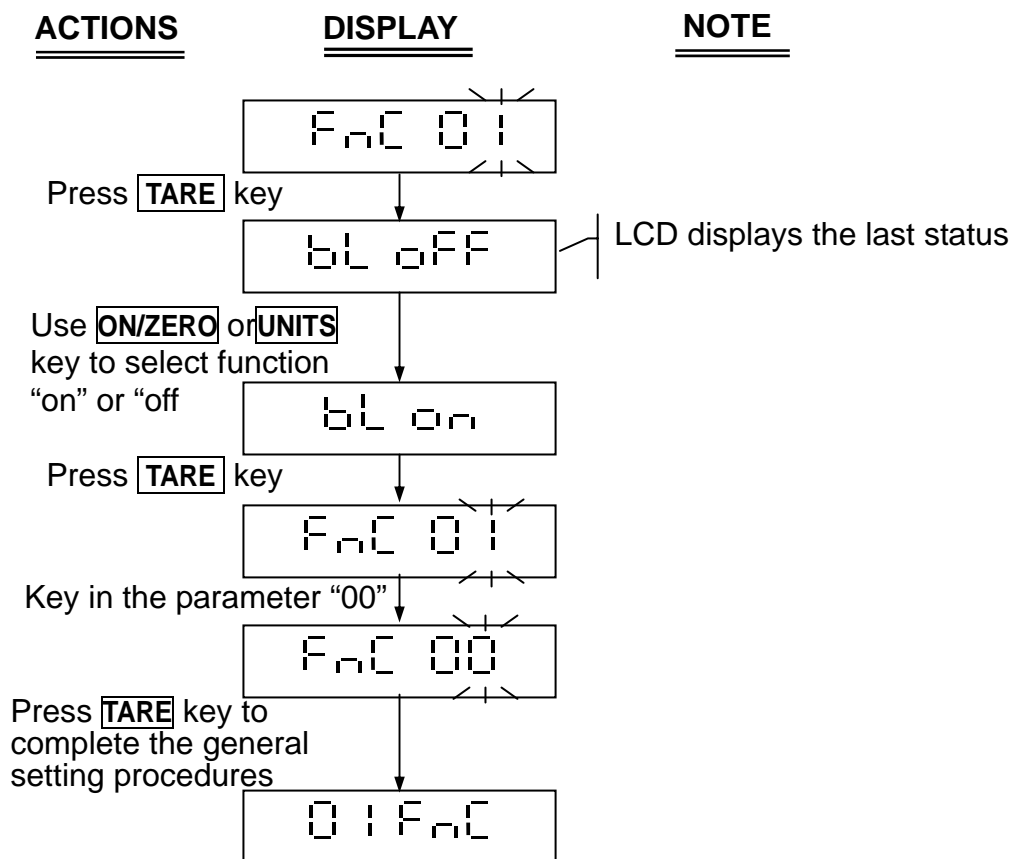
- | | |
|---------------------|---|
| F _n C 00 | ⇒ Return to the Advanced Function Setting Mode Menu |
| F _n C 01 | ⇒ Automatic Backlight Function Settings |
| F _n C 02 | ⇒ Automatic Power-off Timer Settings |
| F _n C 03 | ⇒ Hi/Lo/OK Settings |
| F _n C 04 | ⇒ Restore the Default Settings |
| F _n C 05 | ⇒ Noise Filter Settings |
| F _n C 06 | ⇒ Hold Function Settings |
| F _n C 07 | ⇒ Auto Unit Weight Averaging Setting |

Refer to the following sections for detailed operation procedures of each setting.



2-3-1 Automatic Backlight Function Setting $F_nC \ 0 \ 1$

Select $F_nC \ 0 \ 1$ in the General Function setting mode $0 \ 1 \ F_nC$ to change the backlight function setting.



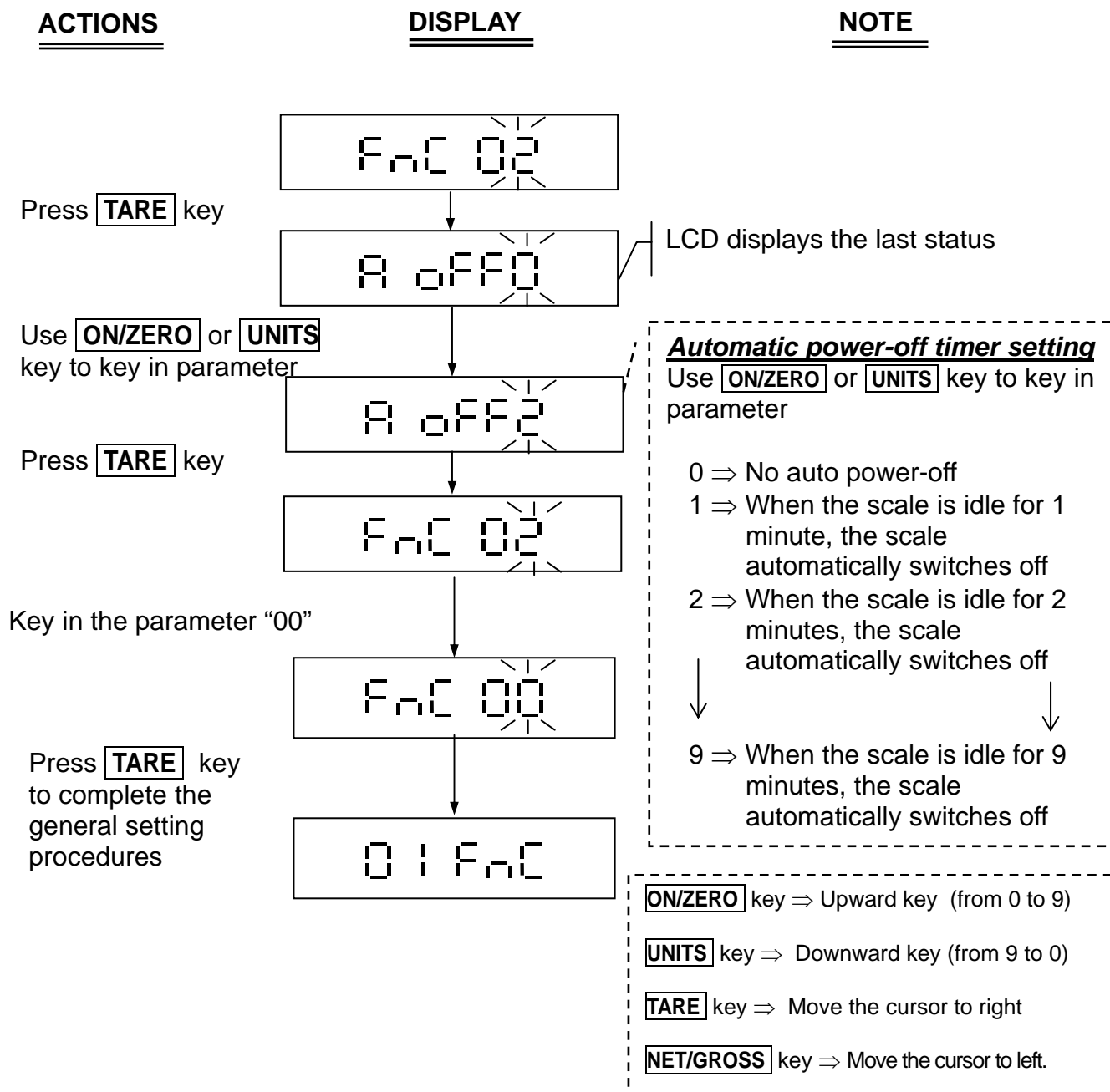
Automatic backlight function

When the weight is over 10d, the display backlight will be on. After the weight is stable for 10 seconds or when the scale returns to zero, the display backlight switches off.



2-3-2 Automatic Power-off Timer Setting $F_{nC} 02$

Select $F_{nC} 02$ in the General Function setting mode $01 F_{nC}$ to change the automatic power-off timer setting.



Automatic power-off function

When the weight on weigh pan is less than 10d or keeps idle for the set time, the scale will automatically switch off.



2-3-3 Hi/Lo/OK Function Setting $F_nC\ 03$

Select $F_nC\ 03$ in the General Function setting mode $01\ F_nC$ to set the Hi/Lo/OK function. This function is available in all unit modes. In one specific unit mode, enter $F_nC\ 03$ to set the Hi/Lo/OK values.

ACTIONS

DISPLAY

NOTE

☞ When the high limit and low limit are both set as “0”, the Hi/Lo/OK function is disabled.

Press **TARE** key

$F_nC\ 03$

ON/ZERO key \Rightarrow Upward key (from 0 to 9)

UNITS key \Rightarrow Downward key (from 9 to 0)

TARE key \Rightarrow Move the cursor to right

NET/GROSS key \Rightarrow Move the cursor to left.

Key in the desired high limit value

005.00h lb

LCD displays the last status

Press **TARE** key

003.000 lb

Key in the desired low limit value

00 1.00L lb

LCD displays the last status

Press **TARE** key

002.000 lb

LCD displays the last status

Key in the parameter setting for alarm

01 100b

Press **TARE** key

100000

Alarm setting

00000b
(a) (b) (c)

The definition of a, b, c positions:

(a) \Rightarrow 1 = beep sound on
0 = beep sound off

(b) \Rightarrow 1 = beep sound on when stable
0 = beep sound on when unstable

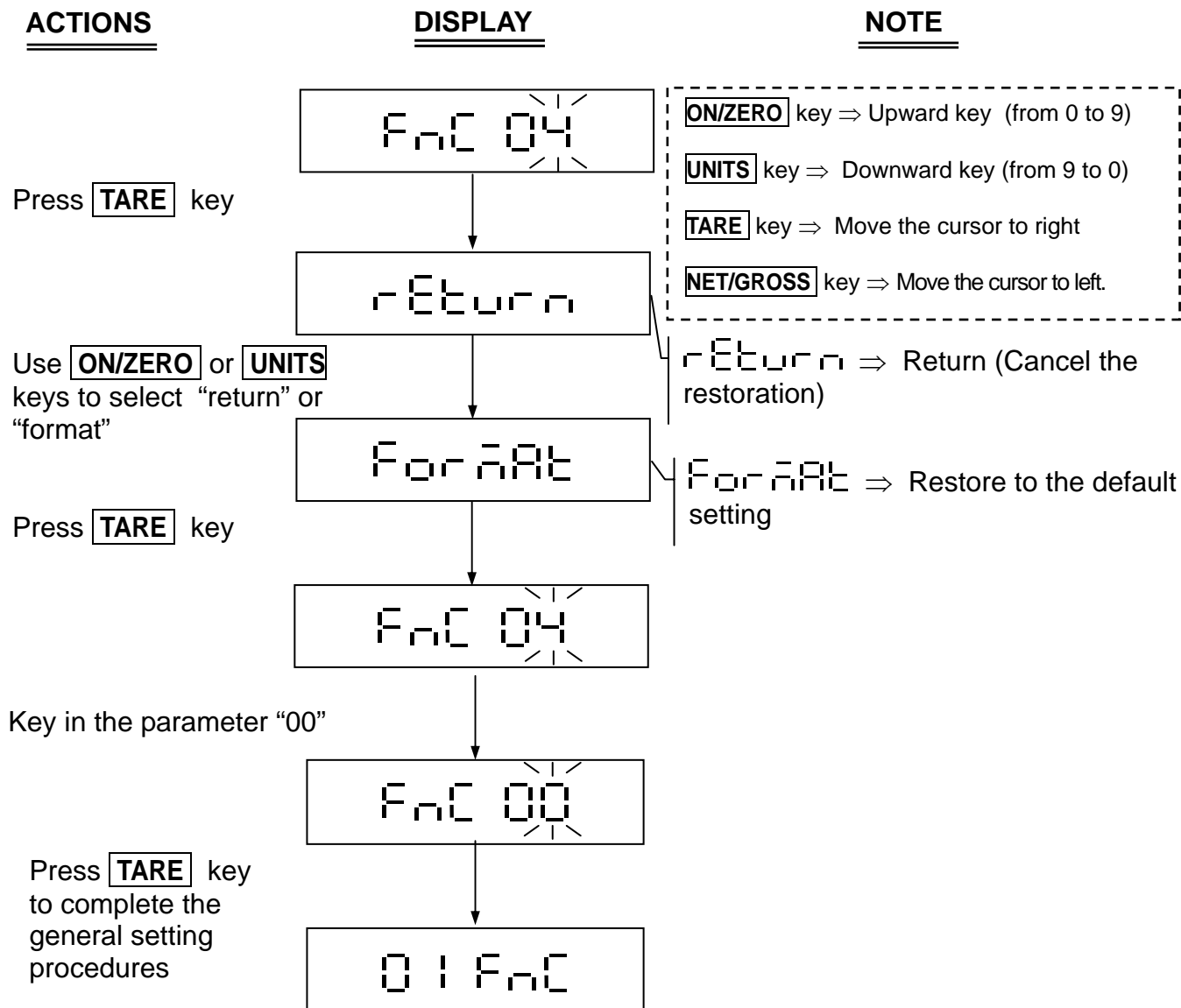
(c) \Rightarrow 1 = beep sound on when the weight is between high and low limits
0 = beep sound on when the weight is not between high and low limits and higher than 10d

Key in the parameter $F_nC\ 00$ and then press **TARE** key to go back to the Advanced function setting menu $01\ F_nC$



2-3-4 Restore to the Default Setting **F_nC 04**

Select **F_nC 04** in the General Function setting mode **01 F_nC** to restore to the default setting.



☰ The default setting includes the following:

- 1) External weight calibration
- 2) HI/LO/OK setting value
- 3) Noise filter setting (External)
- 4) Sampling setting for the counting function

☰ For OIML, NTEP or Sri Lanka approved models, **F_nC 04** setting is disabled.



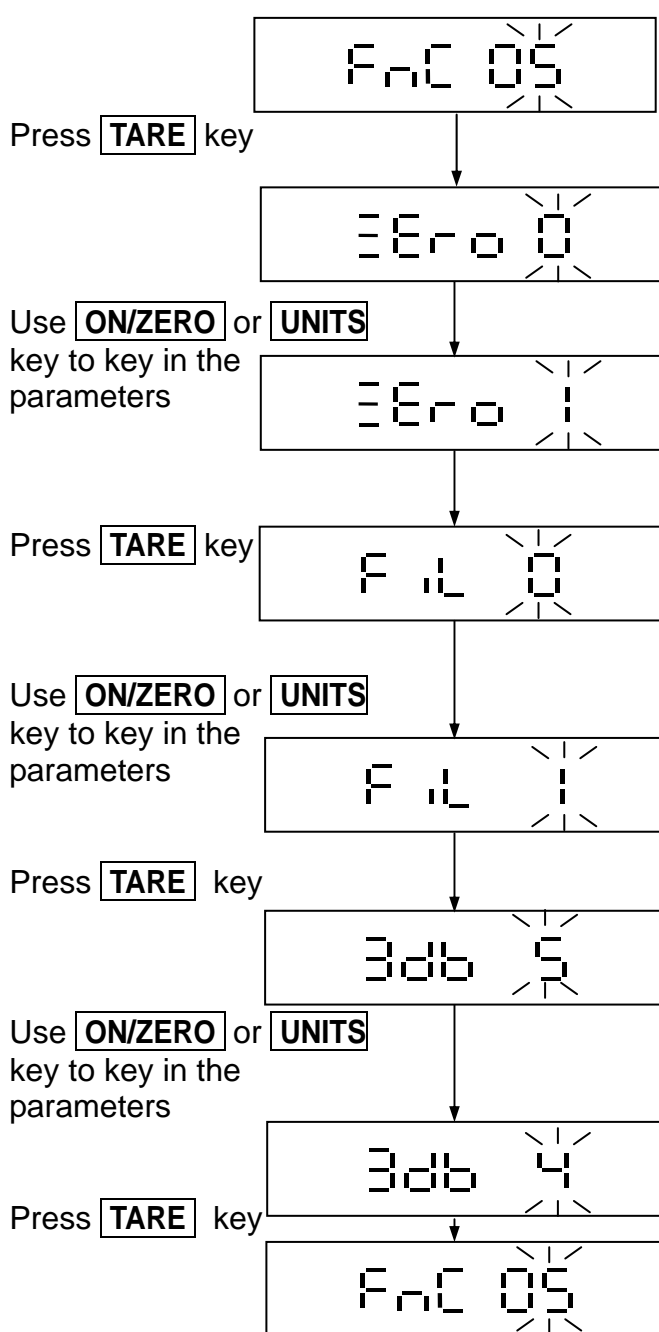
2-3-5 Noise Filter Setting $F_{nC} 05$

Select $F_{nC} 05$ in the General Function setting mode $01 F_{nC}$ to set the noise filter setting.

ACTIONS

DISPLAY

NOTE



Returning to zero point setting

LCD displays the last status

Returning to the zero point setting

Use **ON/ZERO** or **UNITS** key to key in the parameters or zero point

Default setting = 0

- | | |
|-------------|-------------|
| 0 ⇒ No skip | 5 ⇒ skip 5d |
| 1 ⇒ skip 1d | 6 ⇒ skip 6d |
| 2 ⇒ skip 2d | 7 ⇒ skip 7d |
| 3 ⇒ skip 3d | 8 ⇒ skip 8d |
| 4 ⇒ skip 4d | 9 ⇒ skip 9d |

☞ When the weight on the scale is over 1/3 full capacity, the function is on.

Digital switch & Stabilization range setting

LCD displays the last parameter setting

Digital switch & Stabilization range setting

Use **ON/ZERO** or **UNITS** keys to key in the parameters. Default setting = 0
Parameter 0 ~ 9, the larger the number the more stable the weight.

Filter parameter setting

LCD displays the last parameter setting

Filter parameter setting

Use **ON/ZERO** or **UNITS** keys to key in the parameters. Default setting = 5
Parameter 0 ~ 9, the larger the number, the faster the filter response. Fast response can lead to weight instability.

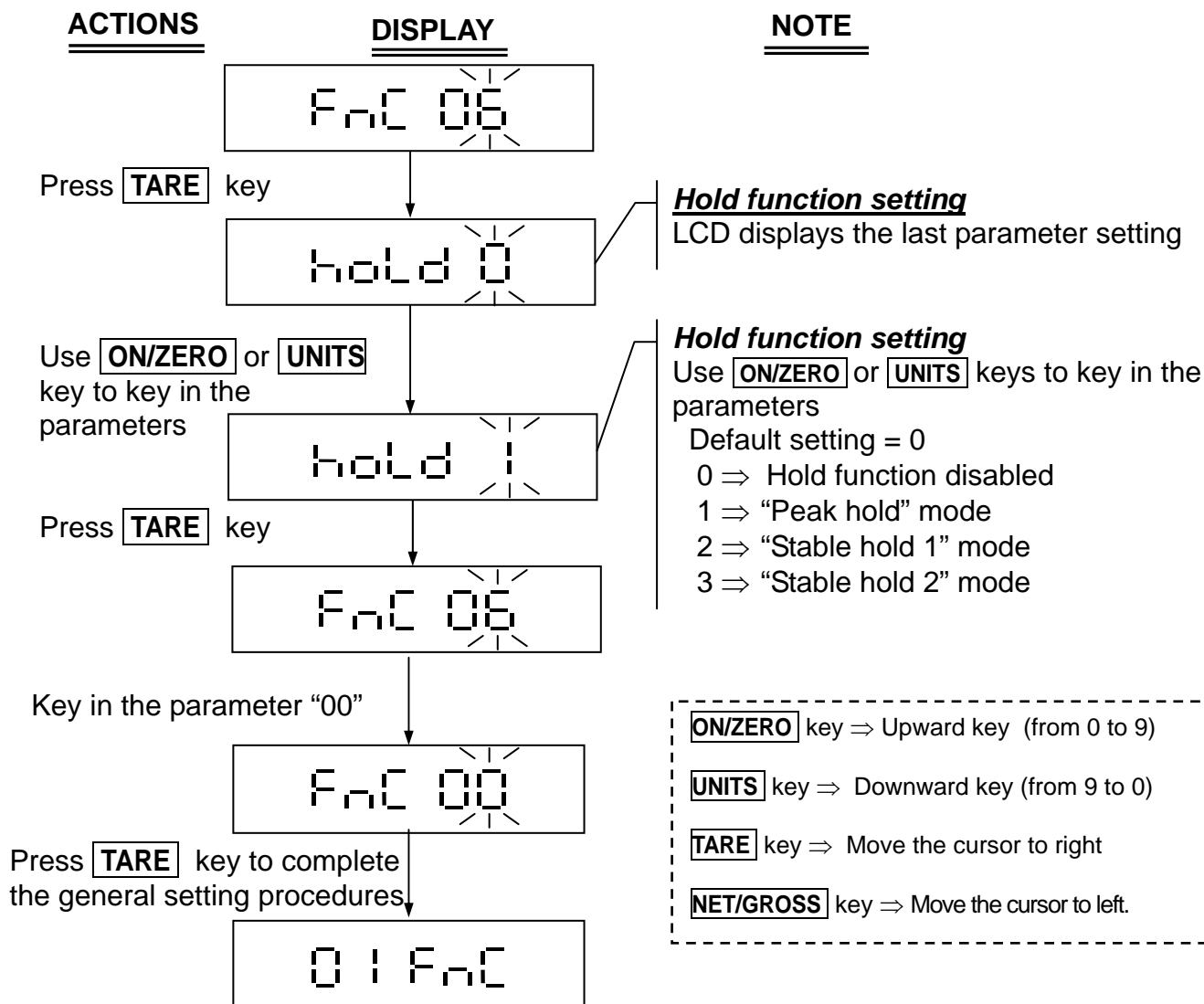
Key in the parameter $F_{nC} 00$ and then press **TARE** key to go back to the Advanced function setting menu $01 F_{nC}$

☞ For OIML, NTEP or Sri Lanka approved models, $F_{nC} 05$ setting is disabled.



2-3-6 Hold Function Setting F_hC 06

Select F_hC 06 in the General Function setting mode 0 | F_hC to set the hold function.



hold 0 = Hold function disabled

hold 1 = "Peak hold" mode

Keep displaying the maximum weight when the weight is continually changing
To exit this mode, press any key.

hold 2 = "Stable hold 1" mode

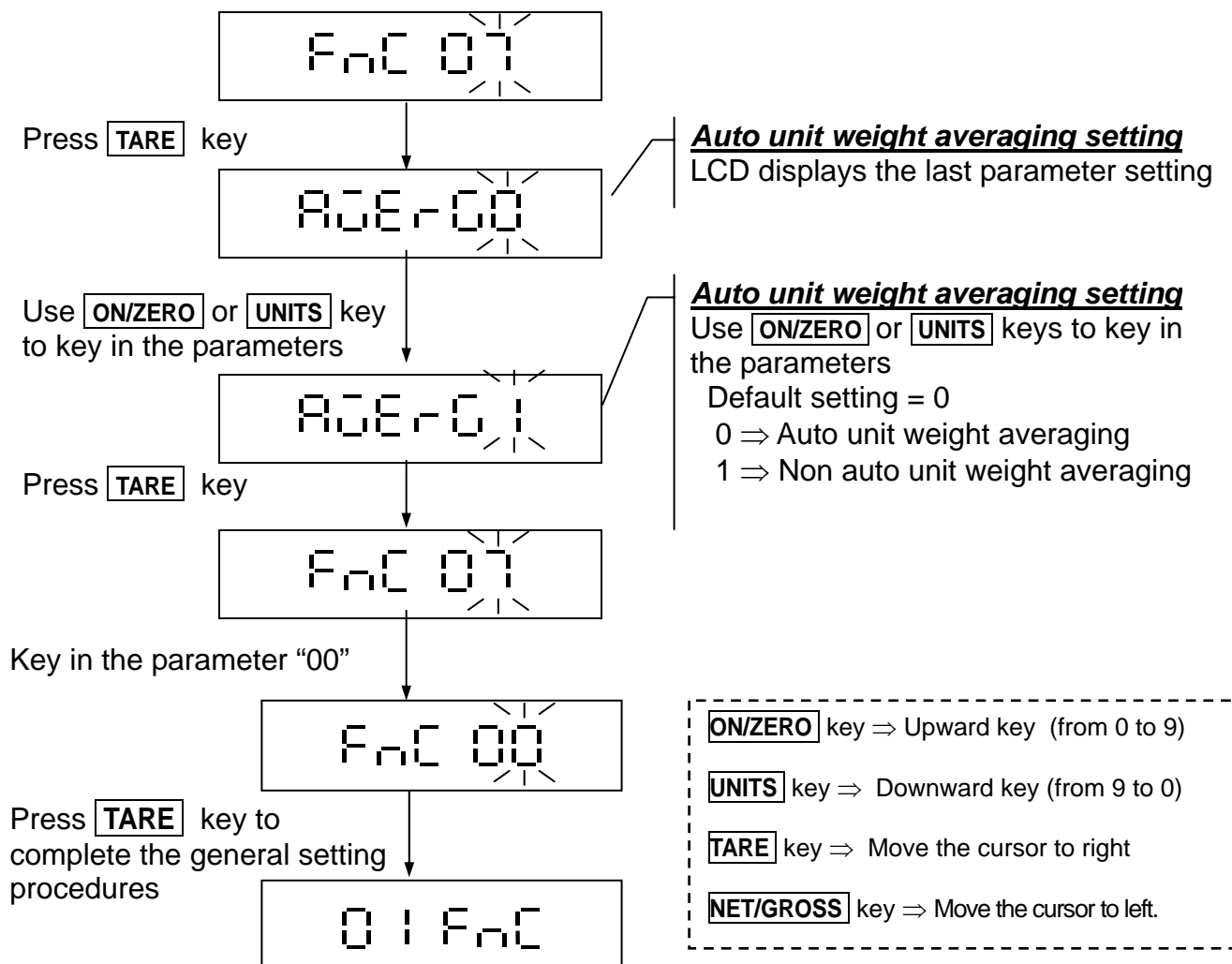
When the weight is stable, the LCD shows the current weight value. To exit this mode, press any key.

hold 3 = "Stable hold 2" mode

When the weight is stable, the LCD shows the current weight value. When the weight returns to zero (<10d), the hold mode is cancelled automatically.



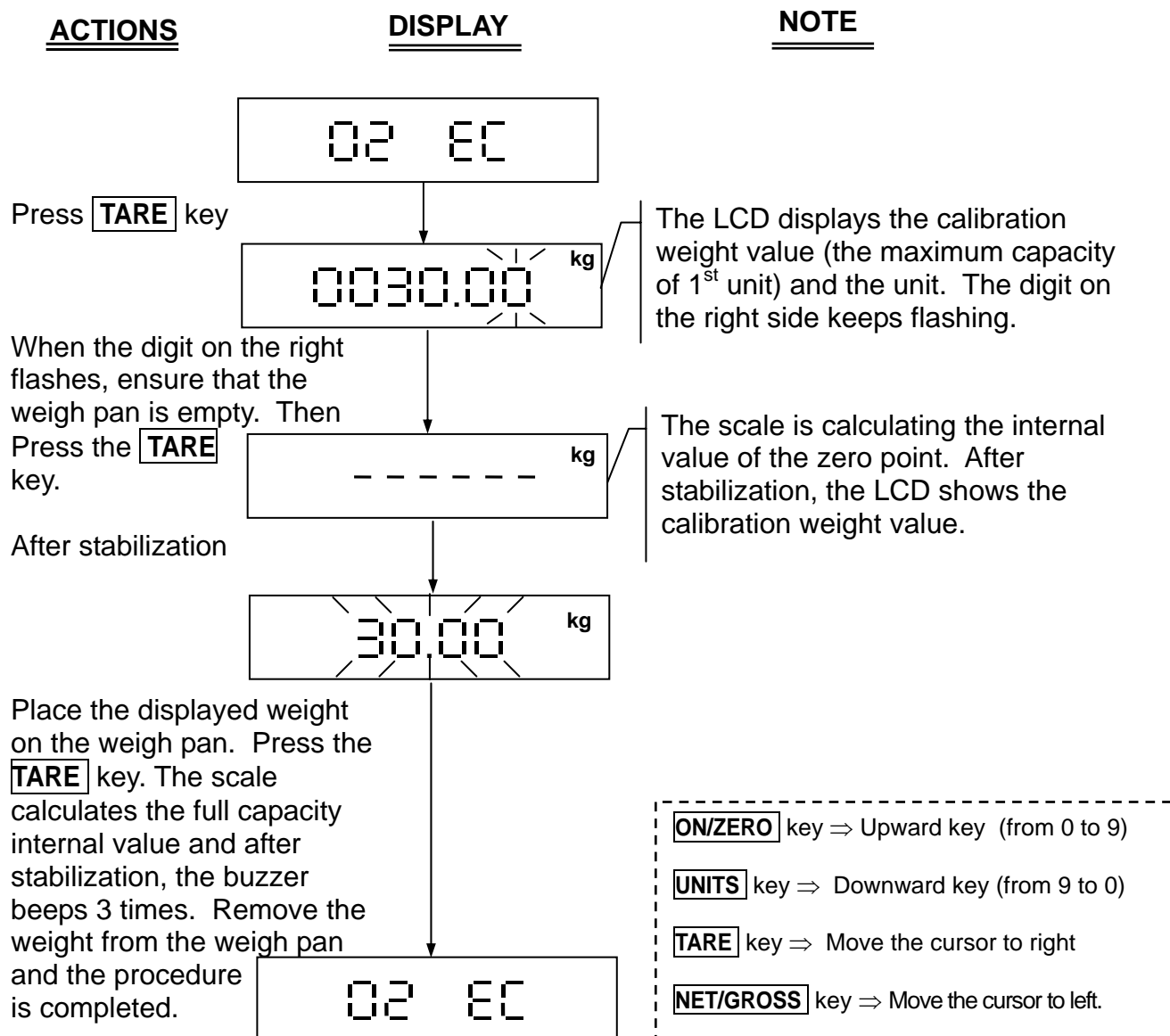
2-3-7 Auto Unit Weight Averaging Setting F_nC 07





2-4 Weight Calibration 02 EC

In the weighing mode, press the **NET/GROSS** and **ON/ZERO** keys at the same time to enter the **Advanced Function** setting mode. The LCD shows 01 F_{nc} and use the **NET/GROSS** or **UNITS** key to select 02 EC to enter the weight calibration mode.



☞ For approved models, 02 EC is disabled.

☞ Weight calibration conditions:

The calibration weight value placed on the weight pan must be over e100, and the standard deviation of the weight must be within 10%.



Appendix 1 7-Segment Display Characters

Digit	7 segments letter	Alphabet	7 segments letter	Alphabet	7 segments letter
0		A		N	
1		B		O	
2		C		P	
3		D		Q	
4		E		R	
5		F		S	
6		G		T	
7		H		U	
8		I		V	
9		J		W	
		K		X	
		L		Y	
		M		Z	